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Alert – December 2006

Alert is a Faraday Packaging **member exclusive** publication, providing packaging innovation insight and opportunities. Members can also request back issues or download them from the members' area of: www.faradaypackaging.com. If you are from a member organisation and not currently receiving *Alert* directly, please send your contact details for your monthly subscription and website login details.



Welcome to the December 2006 issue of *Alert*; your exclusive insight into the latest packaging innovation technologies and opportunities.

In this issue don't miss:

- The opportunity to present industry needs to academic experts in **biomimetics (engineering design inspired by nature)** at a meeting on Biomimetics Textiles, see page 2
- A Spotlight on the **University of Oxford's Crossmodal Research Laboratory** and how their innovative research into multisensory perception can be applied to enhance packaging design, see page 7
- Sustainability Network Manager Alison Waterhouse's, Viewpoint on **Packaging & the Sustainability Debate**, see page 8



Feel free to send Helen Standing, Faraday Packaging's Communications Manager, your thoughts and feedback on *Alert*: +44 (0)113 284 0215 or helen.standing@faradaypackaging.com



□ Human Sciences & Design

□ Biomimetics Textiles – *Call for Papers from Industry*

University of Reading

28th March 2007



The Biomimetics Network for Industrial Sustainability (BIONIS) is looking for speakers from industry for a meeting on Biomimetics Textiles.

The topic of textiles covers everything from technical textiles such as body armour to architectural textiles. The aim of the meeting is for industrial speakers to define the challenges for industry and what industry could use from academia to address these challenges. Talks will be followed by a networking and poster session in the afternoon.

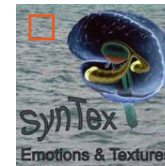
The venue and refreshments will be provided by the Centre for Biomimetics at the University of Reading. Membership to BIONIS is free and open to all.



Technical Textiles

For more information, contact Human Sciences & Design Network Manager Cathy Barnes on: +44 (0)113 284 0217 or: cathy.barnes@faradaypackaging.com

□ Syntex: *Emotional Qualities and Expectations Associated with Textures*



Despite the wide use of visual and haptic (relating to touch) texture in industrial design, architecture and art to convey information (e.g. about the atmosphere or safety of buildings, or the strength, quality, or intended users of objects), there is virtually no systematic research on the emotional qualities and expectations associated with specific textures.

An EU Framework 6 project which began on 1st November 2006, led by Department of Mechanical Engineering, University of Leeds, entitled 'Syntex', aims to provide methods and a theory to objectively measure, model and predict such psychological effects.

The research group, combining knowledge in psychology, neurophysiology, mathematics, machine vision and product design, are working to develop:

- A new measurement method to 'calculate' the degree to which certain feelings or emotions are associated with a particular texture in an individual subject
- A new investigative method for the modelling of human interpretation of visual and haptic textures
- A method to synthesise artificial textures specified to evoke certain feelings and emotions

'Syntex' will have a substantial impact on product design as designers will profit from the ability to use texture in a predictable way to communicate additional information and achieve intended psychological effects.



For more details or to discuss a workshop or project idea in this area, contact Human Sciences & Design Network Manager Cathy Barnes on: +44 (0)113 284 0217 or: cathy.barnes@faradaypackaging.com

Materials & Devices

□ Medium-Term Research – *FaraPack Polymers*



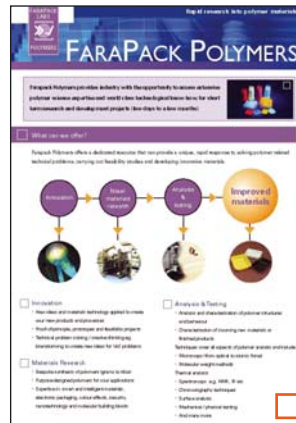
Dr. Malcolm Butler, Managing Director, spoke at the recent FaraPack Polymers Open Day about its capabilities to potential customers. Amongst other services offered by FaraPack Polymers, he identified medium-term research as a niche area filled by the company.

Academic research tends to encompass either 1-5 day consultancy or 12 month post-doctoral projects, predominantly because of funding opportunities. Malcolm highlighted the demand from industry for medium-term research, which FaraPack Polymers are able to meet for the packaging industry and beyond.

Medium-term research includes feasibility studies, literature-based research and technical problem-solving/creative thinking and can provide rapid turnaround for problems, ideas and product development applied to specific needs.

Type of Project Work Available:

- Consultancy (few days)
 - Problem solving (solutions to problems)
 - Brainstorming (new ideas)
- Feasibility studies (few weeks)
 - For new ideas
 - Before 'contract research'
- Targeted development work (few months)
- Bespoke synthesis (few weeks)
- Analysis & testing (individual samples)
- Entry point for traditional University projects
 - PhD's, Post Docs etc
 - Sheffield, Bradford, Durham and Leeds



Faraday Packaging can access numerous means of conducting medium-term research that can generate a lot of information and achieve results on a relatively short timescale. Contact Laurence Hogg, Materials & Devices Network Manager to discuss potential project ideas in the area of materials on: +44 (0)113 284 0214 or: laurence.hogg@faradaypackaging.com

□ Why Register with the Materials KTN?

Faraday Packaging is a specialist applications node of the Materials Knowledge Transfer Network (KTN). Funded by the DTI and managed by the Institute of Materials, Minerals and Mining (IOM3), the Materials KTN acts as an overarching network of networks, ensuring nodes work together, optimise resources and spread best practice. This extensive system brings together the views of those in the value network across the materials community, from trade associations to businesses and academics.

Materials KTN nodes span a number of areas related to materials including the Smart Materials, Surfaces and Structures Network (SMARTmat), Faraday Plastics and the National Metals Technology Centre (NAMTEC).



Being under the Materials KTN umbrella means that Faraday Packaging has access to a wider ranging network of contacts and knowledge, which can only be of benefit to our industrial and academic members. The Materials KTN website forum is a tool for communication, and allows you to join and influence current debates in the materials sector.

Registering with the Materials KTN gives you:

- Access to the latest news, developments and reports on materials technology from around the world, gathered from all sectors of the community
- The facility to participate in debate about the future of materials technology in the UK in a secure online environment
- Signposting to analytical and manufacturing facilities available for developments
- Signposting to funding agencies for new research and developments in materials

Register free with the Materials KTN at: www.materialsktn.net

Materials & Devices

□ NaturalNano



NaturalNano, Inc. is a US-based nanotechnology and materials science company developing technologies and processes for commercialising naturally occurring nanotubes and other nanomaterials that add competitive properties to a wide range of applications.

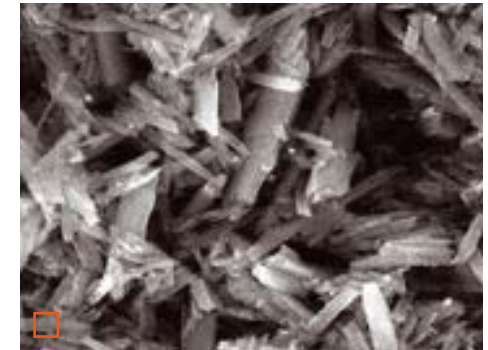
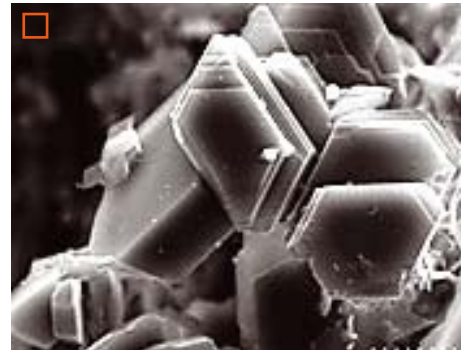
Many plastics manufacturers are now using nanocomposites (nano-sized particles added to the polymer during manufacturing), such as clays, to achieve stronger, lighter-weight plastics. However, nanoclay composites require expensive, time-consuming multi-step processes to achieve these desirable properties.

NaturalNano, Inc. has developed patent-pending technology that bypasses these processing steps, by using halloysite nanotubes. Naturally formed in the Earth over millions of years, halloysite nanotubes are unique and versatile ultra-tiny hollow tubes with diameters typically smaller than 100 nanometers (100 billionths of a meter).

These nanotubes are already discrete nanoparticles, so they don't require exfoliation (separating layers of clay with chemicals and other processing steps) to provide the required dispersion in a polymer matrix. In addition, they can use existing equipment and processes. That makes for a dramatic reduction in processing energy requirements and manufacturing costs, and significant quality improvements.

Halloysite nanotubes added to plastics ensure increased material strength, improved uniformity of the finished materials, and reduced component weight, all at significantly reduced costs. And while most nanoclays can only be used with a limited number of polymers, halloysite nanotubes can be mixed with a broad range of polymers.

NaturalNano has identified specific sectors of the fast-growing nanocomposites market that it plans to focus on in the coming year, including packaging. NaturalNano plans to provide halloysite nanotubes, readily available in quantity, along with licenses to the Company's proprietary technologies, to industry



For more information or to express an interest in research into naturally occurring nanotubes and their commercial applications, contact Materials & Devices Network Manager Laurence Hogg on: +44 (0)113 284 0214 or: laurence.hogg@faradaypackaging.com

Sustainability

□ Refillable Packaging Systems in the Personal Care Market: *Project Findings*

Many argue that current legislation which focuses on recycling is responsible for the shift from using refillable packs to using recyclable containers in metal, plastic and glass. As reduction of packaging waste becomes more important on the agenda, efforts such as light-weighting and materials selection could be supplemented with the use of refillable packaging to help solve the problem of growing amounts of waste.

Past attempts to extend the use of refillables beyond a few traditional areas have met with little success. A DEFRA funded collaborative project between Loughborough University and Boots has set out to develop refillable packaging systems using a product system approach, and to investigate their feasibility within the personal care market.

At the outset of the project the team, when questioning 'what is a refill' recognised that there are approximately fifteen different types of refills ranging from lightweight self contained refill delivered through dispenser (e.g. Kandoo wipes), to self dispense and door to door delivery. These different types need to be investigated on an individual basis in order to fully appreciate the highs and lows of the refillable packaging experience. Through a detailed customer focused questionnaire and review of refillables with industry the project has recognised a number of barriers to the increased and successful use of refills such as increased inconvenience, the hassle of maintenance, feelings of increased waste and poor product quality on the part of the consumer and from the perspective of industry; extra costs, health, safety and the environment (HS&E) issues and the need to move outside traditional operating parameters, associated with some types of refills.

However, it has also found that there can be positive attributes which can actively encourage consumers to buy refillable products – specifically if it provides good product quality, convenient delivery, good value, less waste, is easy to use, is clean and hygienic, takes up less space, and/ or is light to transport. Similarly for industry drivers such as increased brand loyalty, reduced material and resource use, and opportunities for innovation can encourage the uptake of these types of approaches.

Dr. Vicky Lofthouse, Lecturer in Industrial Design & Co-ordinator of the Sustainable Design Network, Loughborough University, who is running the project said: *"In order that these benefits can be realised, future design of refills and the systems in which they operate must take on board these findings to ensure that the barriers are designed out and the drivers are enhanced."*

The main challenge from a sustainability perspective is how to prevent the whole refillable packaging system failing. As examples have shown when they fail it leads to the generation of more waste, therefore a robust system that considers all elements of the system, not just a refillable pack, needs to be designed.

The project is now applying the lessons learned from the initial study to develop a range of potential concepts for body wash products (bath and/ or shower products) within the Botanics range at Boots, which it is expected will be developed into prototypes suitable for testing with consumer groups in late spring 2007.

Request a copy of the full project report or discuss potential project ideas in the area of refillable packaging, with Sustainability Network Manager Alison Waterhouse on: +44 (0)113 284 0216 or: alison.waterhouse@faradaypackaging.com

Sustainability

□ WRAP Innovation Fund Opportunities



Do you want to reduce your packaging impacts? Do you have an idea for an innovative packaging solution that could reduce waste from either packaging or food? Would external funding facilitate this research?

If you can answer yes to one or more of these questions then submitting a proposal to WRAP for funding may be the solution. WRAP (Waste & Resources Action Programme) has just announced two new calls for R&D proposals to optimise consumer packaging and to reduce household food waste through innovations in packaging.

The packaging optimisation tender is for projects to design, develop, test and trial innovative packaging that will reduce household waste originating from the retail sector. WRAP are especially interested in funding projects from the following categories:

- Beverages in cans and cartons
- Frozen foods
- Pet foods
- Jams, preserves, pastes, condiments and sauces
- DIY and home improvement (power tools and decorating materials)
- Household and personal aerosols
- Personal hygiene products and cosmetics
- Crisps, snacks, biscuits (primary and multi packs)
- Raw, cooked and processed meats
- Fresh produce

Proposals must demonstrate the potential to deliver a significant reduction in primary packaging and other packaging that consumers receive.

Proposals must be submitted by either 31st January or 28th March 2007.

WRAP are also calling for proposals to design, develop, test and trial innovative processes and packaging solutions which will reduce household food waste originating from the retail sector. Projects could focus on any of innovations in packaging design, materials use or technologies which have the potential to reduce food waste generated in the home. Priority will be given to innovations aimed at those food categories thought to make the most significant contribution to domestic food waste, these include: chilled meats & fish, chilled pre-prepared meat & fish products, fresh\chilled fruit & vegetables, processed fruit & vegetables, chilled ready meals (incl. pizzas), dairy products, bread and other bakery products.

Proposals for this tender must be submitted by 21st March 2007.

Further details on both tenders can be downloaded from www.wrap.org.uk/wrap_corporate/tenders/index.html

Faraday Packaging is looking for opportunities to support both collaborative and company specific projects in either of the areas. We'll be developing potential ideas over the next few weeks and will be in touch if we think an opportunity may be relevant to you.

If you have any specific project ideas then for an initial discussion in confidence, contact Sustainability Network Manager Alison Waterhouse on: +44 (0)113 284 0216 or: alison.waterhouse@faradaypackaging.com

□ Packaging & the Sustainability Debate

Alison Waterhouse is Faraday Packaging's Sustainability Network Manager. She offers her Viewpoint on the lack of understanding about the functions of packaging in the bid to reduce waste.

How many functions does packaging serve? Protection, branding, transportation, information and preservation are just a few. And yet, if you were to believe recent publicity regarding the horrendous excesses of packaging overflowing from retailers, you might think that the only true purpose of packaging is to use up space in carrier bags and overflow from our rubbish bins before filling up landfill sites. No wonder consumers are confused.

When Environment Minister Ben Bradshaw recently added to this confusion by proposing that consumers should leave all packaging at the supermarket till to protest against the volume of waste, not surprisingly, some enterprising journalists promptly tested this suggestion with equally unsurprising results ('The government told us to do it', *The Guardian*, 15th November 2006). Reinforcing the 'all packaging is bad' message, their findings focussed solely on perceptions of excess without acknowledgment of any of the valid uses of packaging.



Admittedly, in such a diverse industry as packaging, there are bound to be examples of worst practice, just as there are of good practice. The challenge for companies wishing to take a proactive approach to minimising their packaging impacts must be in

balancing these environmental improvements whilst maintaining the fundamental uses of packaging (protection, branding, information etc) – and getting this message across. Certainly a more difficult proposition than just reducing packaging amounts.

Of course the generally accepted understanding of sustainability is in balancing business gains across financial, community and environmental arenas. In making changes to packaging to improve its environmental aspects, risking brand identity is just a non starter. So the issue seems to be – how can you reduce environmental impacts whilst retaining, or even enhancing your brand?

One approach to this issue that Faraday Packaging has been working on recently is in the WRAP funded ContainerLite and GlassRite projects which look to reduce the weight of container glass without changing container shape or impacting on brand identity. Both projects are shaping up to deliver some real wins for the packaging sustainability argument.

Also, the Faraday Packaging team is currently developing ideas for innovations in other areas that will allow companies to demonstrate their commitment to sustainability, won't negatively impact on brand identity and may even help with the message that packaging isn't all bad.



I suspect that in many cases I'm already preaching to the converted but if you have any suggestions on how we can go forward then let me know – I suspect it's going to take a joint effort to push the message across.

To discuss potential project ideas in packaging and food waste reduction, contact Sustainability Network Manager Alison Waterhouse on: +44 (0)113 284 0216 or: alison.waterhouse@faradaypackaging.com (see article in Sustainability section on WRAP Innovation Fund Opportunities).

□ News and Events

□ Polymer IRC Annual Review



Polymer IRC has released its 2006 Annual Review.

The Polymer IRC has been bringing together skills and resources in macromolecular science and technology from leading academic institutions for over a decade. It facilitates the building of effective multidisciplinary teams on the basis of scientific and technological requirements, rather than on the basis of geographical location. Core-science and industrial collaboration are of equal importance.

The review includes research highlights, details of Polymer IRC events and work done by Polymer IRC to raise public awareness and the appreciation of science. There is also a list of key contacts and comprehensive directory.

Contact Helen Standing for an electronic copy on: +44 (0)113 284 0215 or:
helen.standing@faradaypackaging.com

□ Faraday Packaging Events Programme 2007

The Faraday Packaging team has developed a comprehensive programme of workshops for 2007, which will help you gain and embed a deeper understanding of new insights and opportunities throughout your company.



Bringing a fresh approach to pack development we will be delivering open, customised and member-exclusive workshops developed in response to key industry themes and drivers.

These include:

Knowledge Building Workshops

- Half day in-house interactive workshops on areas such as inclusive design

Project Development Workshops

- Brainstorming, discussion forums to explore potential collaborative projects ideas such as environmental life cycle modelling

Dissemination & Futurology Workshops

- Exploration of the trends, drivers, issues, scenarios, technologies, etc., that will have an impact on the future of the packaging industry including our annual conference FaraPack Briefing

The full programme will be circulated to all members soon. For more information or to register for any of the workshops, contact Marketing & Account Manager Pauline King on: +44 (0)113 284 0213 or:
pauline.king@faradaypackaging.com